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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/524,575	03/13/2000	Takuya Hiramatsu	SEI-142-133	7265

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EXAMINER
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TRAN, HIEN THI

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 05/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/524,575

Applicant(s)

HIRAMATSU ET AL.

Examiner

Hien Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 7,8,11,12,15,17,19,21,22,26,29 and 30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7,8,11,12,15,17,19, 21,22,26,29 and 30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5/5/05
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 7-8, 11-12, 15, 17, 29-30 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 07-213910.

With respect to claims 7-8, 11-12, 15, 17, 29-30, JP 07-213910 discloses a system for exhaust gas purification comprising:

an in-line exhaust pipe;

at least one adsorbent 4 capable of adsorbing harmful substances in exhaust gas, the adsorbent containing a H/Beta-zeolite having a  $\text{SiO}_2/\text{Al}_2\text{O}_3$  ratio of 100 or more, and at least one catalyst component of noble metal, such as Pt, Pd, Rh supported on ceria/alumina (sections 0008, 0012, 0014); and

at least one catalyst 5 containing a catalyst component, capable of reducing said harmful substances;

both said at least one adsorbent and said at least one catalyst being provided at the in-line exhaust pipe of an internal combustion engine.

Instant claims 7-8, 11-12, 15, 17, 29-30 structurally read on the apparatus of JP 07-213910.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 7-8, 11-12, 15, 17, 19, 21-22, 26, 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 94/11623 in view of EP 661,098, EP 602,963 and JP 7-124468.

With respect to claim 7, WO 94/11623 discloses a system for exhaust gas purification comprising:

at least one adsorbent capable of adsorbing harmful substances in exhaust gas, the adsorbent containing a H/Beta-zeolite having a SiO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> ratio of 100 or more (page 4, lines 22-37); and

at least one catalyst containing a catalyst component, capable of reducing said harmful substances (page 6, lines 13-24);

both said at least one adsorbent and said at least one catalyst being provided at an in-line exhaust pipe of an internal combustion engine (page 7, lines 18-33; page 26, lines 9-14).

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The apparatus of WO 94/11623 is substantially the same as that instantly claimed, but fails to disclose whether the adsorbent may contain at least one catalyst component of noble metal.

However, JP 7-124468, EP 661,098, EP 602,963 show the conventionality of providing an adsorbent containing Beta zeolite and at least one catalyst component of noble metal, such as Pt, Pd, Rh supported thereon (col. 11, lines 41-47 in EP 661,098; page 5, lines 2-7 in EP 602,963, abstract of JP 7-124468).

It would have been obvious to one having ordinary skill in the art to add a catalyst component as taught by JP 7-124468, EP 661,098, and EP 602,963 in the apparatus of WO 94/11623 for control coking occurred in parallel with the adsorption of harmful substances, i.e. hydrocarbon, thereby to facilitate the regeneration of the adsorbent without lowering the adsorption ability of the zeolite.

With respect to claims 11-12, WO 94/11623 discloses that the catalyst contains at least one noble metal as catalyst component, selected from Pt, Pd and Rh (page 11, lines 26-31, page 19, lines 28-34).

With respect to claims 8, 30, EP 602,963 discloses that Pd is preferably used as the noble metal carried into the zeolite (page 5, lines 6-7, 24-25). EP 661,098 also disclosed that Pd is preferably used because it allows for low temperature ignition (col. 11, lines 1-2).

With respect to claims 15, 17, JP 7-124468, EP 661,098, and EP 602,963 disclose that the noble metal is loaded on heat-resistant oxide (col. 12, lines 43-47 in EP 661,098; page 5, lines 25-27 in EP 602,963; abstract of JP 7-124468).

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With respect to claims 19, 21-22, 26, the modified apparatus of WO 94/11623 is substantially the same as that instantly claimed, but fails to disclose whether the adsorbent may have a hollow central portion.

However, EP 661,098 discloses provision of an adsorbent in honeycomb shape, said adsorbent having a hollow central portion.

It would have been obvious to one having ordinary skill in the art to provide an adsorbent with hollow central portion as taught by EP 661,098 in the modified apparatus of WO 94/11623 so as to retard the timing of the start of HC desorption as taught by EP 661,098.

With respect to claim 29, WO 94/11623 discloses that the adsorbent contains an H/Beta-zeolite having a  $\text{SiO}_2/\text{Al}_2\text{O}_3$  ratio of 200 or more (page 4, lines 22-37, page 5, line 1).

6. Claims 7-8, 11-12, 15, 17, 19, 21-22, 26, 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 661,098 in view of WO 94/11623.

With respect to claim 7, EP 661,098 discloses a system for exhaust gas purification comprising:

at least one adsorbent capable of adsorbing harmful substances in exhaust gas, the adsorbent containing a Beta-zeolite and at least one catalyst component of noble metal, such as Pt, Pd, Rh supported thereon; and

at least one catalyst containing a catalyst component, capable of reducing said harmful substances;

both of said at least one adsorbent and said at least one catalyst being provided at an in-line position of exhaust pipe of an internal combustion engine.

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The apparatus of EP 661,098 is substantially the same as that instantly claimed, but is silent as to the specific type of the Beta-zeolite as claimed.

However, WO 94/11623 discloses the conventionality of providing H/Beta-zeolite as an adsorbent, said H/Beta-zeolite having a  $\text{SiO}_2/\text{Al}_2\text{O}_3$  ratio of 100 or more (page 4, lines 22-37).

It would have been obvious to one having ordinary skill in the art to substitute the H/Beta-zeolite of WO 94/11623 for the Beta-zeolite of EP 661,098 for the known and expected result of obtaining the same results in adsorbing pollutant from exhaust gas, since WO 94/11623 teaches that unexpectedly, beta-zeolite has been shown to be particularly effective adsorbents, especially those having high silica/alumina ratio.

EP 661,098 also show the conventionality of providing an adsorbent containing Beta zeolite and at least one catalyst component of noble metal, such as Pt, Pd, Rh supported thereon (col. 11, lines 41-47 in EP 661,098).

With respect to claims 8, 30, EP 661,098 also disclosed that Pd is preferably used because it allows for low temperature ignition (col. 11, lines 1-2).

With respect to claims 11-12, EP 661,098 discloses that the at least one catalyst contains at least one noble metal as catalyst component, selected from Pt, Pd and Rh (col. 10, lines 29-35 in EP 661,098).

With respect to claims 15, 17, EP 661,098 discloses that the noble metal is loaded on heat-resistant oxide (col. 12, lines 43-47 in EP 661,098).

With respect to claims 19, 21-22, 26, EP 661,098 discloses provision of an adsorbent in honeycomb shape, said adsorbent having a hollow central portion.

With respect to claim 29, WO 94/11623 discloses that the adsorbent contains an H/Beta-zeolite having a  $\text{SiO}_2/\text{Al}_2\text{O}_3$  ratio of 200 or more (page 4, lines 22-37, page 5, line 1).

7. Claims 7-8, 11-12, 15, 17, 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 602,963 in view of WO 94/11623.

With respect to claim 7, EP 602,963 discloses a system for exhaust gas purification comprising:

at least one adsorbent capable of adsorbing harmful substances in exhaust gas, the adsorbent containing a Beta-zeolite and at least one catalyst component of noble metal, such as Pt, Pd, Rh supported thereon; and

at least one catalyst containing a catalyst component, capable of reducing said harmful substances;

both said at least one adsorbent and said at least one catalyst being provided at an in-line position of exhaust pipe of an internal combustion engine.

The apparatus of EP 602,963 is substantially the same as that instantly claimed, but is silent as to the specific type of the Beta-zeolite as claimed.

However, WO 94/11623 discloses the conventionality of using the H/Beta-zeolite as an adsorbent having a  $\text{SiO}_2/\text{Al}_2\text{O}_3$  ratio of 100 or more (page 4, lines 22-37).

It would have been obvious to one having ordinary skill in the art to substitute the H/Beta-zeolite of WO 94/11623 for the Beta-zeolite of either EP 602,963 for the known and expected result of obtaining the same results in adsorbing pollutant from exhaust gas, since WO 94/11623 teaches that unexpectedly, beta-zeolite has been shown to be particularly effective adsorbents, especially those having high silica/alumina ratio.



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EP 602,963 also shows the conventionality of providing an adsorbent containing Beta zeolite and at least one catalyst component of noble metal, such as Pt, Pd, Rh supported thereon (page 5, lines 2-7 in EP 602,963).

With respect to claims 8, 30, EP 602,963 discloses that Pd is preferably used as the noble metal carried into the zeolite (page 5, lines 6-7, 24-25).

With respect to claim 29, WO 94/11623 discloses that the adsorbent contains an H/Beta-zeolite having a  $\text{SiO}_2/\text{Al}_2\text{O}_3$  ratio of 200 or more (page 4, lines 22-37, page 5, line 1).

With respect to claims 11-12, EP 602,963 discloses that the at least one catalyst contains at least one noble metal as catalyst component, selected from Pt, Pd and Rh (page 5, lines 18-29 in EP 602,963).

With respect to claims 15, 17, EP 602,963 discloses that the noble metal is loaded on heat-resistant oxide (page 5, lines 25-27 in EP 602,963).

8. Claims 19, 21-22, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 602,963 in view of WO 94/11623 as applied to claims 7-8, 11-12, 15, 17, 29-30 above and further in view of EP 661,098.

With respect to claims 19, 21-22, the modified apparatus of EP 602,963 is substantially the same as that instantly claimed, but fails to disclose whether the adsorbent may have a hollow central portion.

However, EP 661,098 discloses provision of an adsorbent in honeycomb shape, said adsorbent having a hollow central portion.

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It would have been obvious to one having ordinary skill in the art to provide an adsorbent with hollow central portion as taught by EP 661,098 in the modified apparatus of EP 602,963 so as to retard the timing of the start of HC desorption as taught by EP 661,098.

9. Claims 19, 21-22, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 07-213910 in view of EP 661,098.

The same comments with respect to EP 661,098 apply.

***Response to Arguments***

10. Applicant's arguments filed 3/16/05 have been fully considered but they are not persuasive.

Applicants argue that the WO 94/11623 cannot comprise an in-line exhaust pipe. Such contention is not persuasive as WO 94/11623 does disclose that the apparatus including a flow path for the exhaust gas, an adsorbent zone disposed in the flow path and a catalyst zone disposed in the flow path downstream of the adsorbent zone (see, for example, the embodiment on page 7, lines 18-33). The flow path in such system is considered as an in-line exhaust pipe.

Applicants argue that the two monoliths of the first and second catalysts in WO 94/11623 cannot be positioned in an in-line exhaust pipe as required by the instant claims. Such contention is not persuasive since as set forth above WO 94/11623 discloses a plurality of embodiments. Provision of the adsorbent and the downstream catalyst being disposed in a flow path/in-line pipe is one embodiment (page 7, lines 18-33).

Applicants request the explanation in which the monoliths provided in an in-line pipe in heat exchange relation to one another. Such contention is not persuasive as the cross-flow type system of WO 94/11623 is just one in a plurality of embodiments. WO 94/11623 also discloses

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other types of system including the one set forth on page 7, lines 18-33 in WO 94/11623. In any event, it should be noted that the two monoliths placed next to each other in an in-line pipe can provide heat exchange relationship.

Applicants argue that the motive and reasonable expectation of success have not been shown in combine the references of EP '098 and WO '623 or EP '963 and WO '623. Such contention is not persuasive as these references disclose the adsorbent in forms of molecular sieve, which is used for purifying exhaust gas from engine. Furthermore, WO '623 on page 12, lines 19-37 discloses that the use of either ZSM-5 or Beta zeolite is known in the art.

Applicants argue that the properties of exhaust gas when treated with an adsorbent in an in-line pipe cannot be reasonably predicted from the results of treating exhaust gas with the adsorbent in a looped system. Such contention is not persuasive since as set forth above, both EP '098 and EP '963 and WO '623 disclose provision of an in-line pipe as set forth above.

The declaration filed 3/16/05 has been considered. However, it is not convincing since WO '623 does disclose the in-line pipe embodiment besides the cross-flow type embodiment.

### ***Conclusion***

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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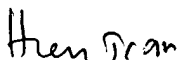
CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Tran whose telephone number is (571) 272-1454. The examiner can normally be reached on Tuesday-Friday from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HT

  
**Hien Tran**  
**Primary Examiner**  
**Art Unit 1764**